

10. SUMMARY AND CONCLUSIONS

10.1 PROPOSED MASONVILLE DMCF

The proposed Masonville Dredged Material Containment Facility (DMCF) is located within the estuarine reaches of the Patapsco River, which is generally considered Baltimore Harbor (a tributary of the Chesapeake Bay), Maryland. The site is located approximately 4 miles upstream of the Key Bridge and approximately 1 mile downstream of the Hanover Street Bridge, on the southern shore of the Harbor. The land portions of the site lie within Baltimore City, Maryland. Immediately west of the proposed DMCF is approximately 55 acres of habitat protection area, known as Masonville Cove. The Cove and adjacent land are undeveloped and utilized by fish and wildlife species, but also contains substantial amounts of debris. Cleanup and enhancement of this area has been integrated into the proposed DMCF site development plan as compensatory mitigation and community enhancements.

Baltimore's geographic location as the port that is situated furthest inland along the East Coast enables it to rapidly ship cargo to the inland industrial centers of the U.S. In order to keep the Baltimore Harbor channels open for safe passage, dredging must occur. Maryland Port Administration (MPA) estimates indicate that Harbor dredging projects for maintenance and new work generate approximately 1.5 million cubic yards (mcy) of dredged material annually. This demand for disposal of dredged material is expected to continue in the foreseeable planning horizon. State environmental regulations dictate that materials dredged from the Harbor be placed at a DMCF. Currently, material dredged from the Harbor is placed at the Hart-Miller Island (HMI) DMCF. By statute, the HMI DMCF must be closed by 2010 and the HMI DMCF may stop receiving Harbor material in 2008 due to the need to cap the site with materials suitable for habitat development. The Cox Creek DMCF has been reactivated for receipt of dredged material, however annual capacity is limited if overloading of the site is to be minimized. Under current circumstances, State assessments indicated that a shortfall of annual dredged material capacity will occur in State Fiscal Year (SFY) 2009. The State concluded that this shortfall presents an urgent need to study, select, and implement new options capable of accepting the annual volume of 1.5 mcy of material from the Harbor channels.

To address the predicted dredged material placement capacity shortfall, the MPA utilized the committees of the State Dredged Material Management Program (State DMMP) to identify and screen potential Harbor Options. This resulted in the formation of a Harbor Team comprised of local citizens groups. The Harbor Team, along with citizens and Federal and local resource agencies, screened hundreds of potential options for upland disposal, island creation, fastland creation, and even innovative reuses, drawing on studies going as far back as 1970. Along with general policy recommendations for the MPA to move toward increased management of dredged materials through innovative reuses (0.5 mcy annually by 2023), three specific sites were selected for State feasibility-level study and include: Masonville, Sparrows Point, and the former British Petroleum (BP) Amoco Asphalt Terminal in Fairfield (BP-Fairfield). Studies indicated that development is feasible for all three sites. The Harbor Team also recommended further study and development of innovative reuse and set a goal of 0.5 mcy of Harbor material being managed in this manner by 2023. A range of innovative reuses including agricultural application, mine and quarry reclamation, landfill application, and brick/aggregate

manufacturing are being considered presently but the development timeline falls outside the window to manage the Harbor Shortfall. Of the site specific options that the Harbor Team recommended, Masonville was identified as the preferred option to solve the near-term capacity shortfall from an environmental and engineering standpoint and it meets the economic requirements of the MPA. The site is owned by MPA and has the fewest constructability issues. Thus, Masonville is the first of the three sites that was analyzed through the National Environmental Policy Act (NEPA) process. Sparrows Point and BP-Fairfield projects will be presented in subsequent, separate NEPA documents.

Concurrent with the State site screening process, the U.S. Army Corps of Engineers (USACE) was conducting an independent assessment of dredging and placement needs for Baltimore Harbor. The USACE recently completed its own Federal Dredged Material Management Plan (Federal DMMP) for placement of material dredged from the Baltimore Harbor and approach channels. This Federal DMMP (USACE 2005) assessed placement capacity for material dredged from Federal Channels for a 20-year planning horizon. The Federal DMMP is a tiered Environmental Impact Statement (EIS) that contains recommendations for placement of dredged material, but the Federal DMMP does not make site-specific determinations for future placement sites for material dredged from the Harbor (USACE 2005). Seven alternatives were selected as the recommended plan to meet the 20-year dredged material capacity needs of the Port of Baltimore, and were evaluated in the Programmatic DMMP and Tiered EIS Evaluation (USACE 2005). Three of these seven alternatives were applicable to dredged material placement for the Baltimore Harbor channels:

- Multiple DMCFs in the Patapsco River, MD
- Optimized use of existing dredged material management sites in Maryland, including Pooles Island Open Water Site, HMI DMCF, and Cox Creek DMCF.
- Innovative use alternatives

The MPA developed and analyzed six alignments for the proposed Masonville DMCF based on engineering constraints to determine which was the most cost-effective and environmentally acceptable option. Final Feasibility Alignment 3 was chosen as the preferred alternative for proposed site development and was carried forth through the NEPA process. Alignment 3 would avoid some of the areas of poorest foundation conditions and would also avoid any infringement on Masonville Cove. The proposed alignment includes 130 acres of tidal open water habitat, 1 acre of vegetated wetlands, and 10 acres of upland habitat within the Chesapeake Bay Critical Area buffer that would require mitigation. Outreach efforts involving the adjacent community (Brooklyn-Curtis Bay) have identified Masonville Cove as a good opportunity for ecological enhancement and mitigation with additional opportunities for education and recreation. Therefore, Masonville Cove has become the centerpiece of the compensatory mitigation package.

Because the proposed Masonville DMCF is on an accelerated schedule in order to meet the Baltimore Harbor dredging needs shortfall (Tables 1-1 and 1-2), it became apparent in late 2004 that the Masonville project might have to move forward for permitting independent of the other potential Harbor placement facilities. Consequently, the MPA decided to pursue tidal wetlands permits (and other necessary permits) through the joint State-Federal permit mechanism. The MPA met with the State and Federal Joint Evaluation Committee in January 2005. In March

2005, the USACE – Baltimore District, Regulatory Branch, established that it would be the lead agency for these efforts and the MPA met with USACE – Baltimore District and Maryland Department of the Environment (MDE) to establish a timeline and determined that an EIS would be required to accompany the wetlands permit application. Public scoping for the NEPA document began in June 2005. Mitigation negotiations are ongoing with the State and the USACE.

State feasibility-level studies of the site were completed in late summer 2005. The results are detailed in this draft environmental impact statement (DEIS). Existing conditions surveys found that Masonville lies in an area with relatively low salinities and weak tidal currents. The bottom sediments in Baltimore Harbor and the Masonville site vicinity are predominantly clayey silt, with some locations of sand, silt and clay. Studies indicated the sediments in some parts of the site contain elevated concentrations of typical urban, riverine sediment contaminants such as metals, polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), and pesticides. Concentrations of some of the contaminants exceed sediment quality guidelines for probable ecological effects. Water quality in the area is degraded due to anthropogenic inputs and the area is prone to eutrophication in warmer months. Benthic conditions within the site are generally degraded and fish utilization within the footprint of the proposed facility is low relative to other areas of the Harbor in most seasons. There are no known Rare, Threatened, and Endangered (RTE) species utilizing the proposed Masonville DMCF area, although transient RTE species, such as the bald eagle, have been observed on occasion in the vicinity of the proposed project. In addition, the Harbor does not provide significant Essential Fish Habitat (EFH) for Magnuson-Stevens Fishery Conservation & Management Act (MSFCMA) regulated species. A small area of submerged aquatic vegetation (SAV) was identified within the DMCF footprint and approximately 10 acres of Tier I/Tier II SAV habitat would be impacted due to site development.

Conversely, the adjacent Masonville Cove has relatively good sediment and benthic conditions in most areas and supports a diverse fish community. Masonville Cove is a Designated Habitat Protection Area (DHPA) within Baltimore City, mainly due to bird utilization. This function would be protected and enhanced as part of the mitigation for the proposed project. There are few terrestrial resources because the area is largely industrial and the resources that do exist are predominantly opportunistic plant and animal species. However, a bald eagle nest existed at Masonville Cove within the past 3 years and may still be in the area. Two small vegetated wetlands (totaling 1 acre) exist within the proposed DMCF footprint, but more extensive wetlands do occur within Masonville Cove. Enhancement plans, as part of the integrated compensatory mitigation project for Masonville Cove are designed to improve substrate and in-stream habitat, including SAV. These projects should have secondary positive effects on water quality. Masonville Cove enhancements would also include cleanup of the terrestrial area and planting of native species. Creation and enhancement of wetlands and creation of beach areas are also planned as additional ecosystem restoration efforts within Masonville Cove.

The proposed Masonville DMCF footprint supports few human use amenities. Recreation in the area, other than birdwatching around Masonville Cove, is presumed to be low. No historical or cultural resources occur within the proposed DMCF footprint or Masonville Cove. Recreational fishing appears to be minimal and no commercial fisheries harvesting occurs in the area.

Local demographics indicate that the neighborhoods in the vicinity of the site do not contain a disproportionate minority population relative to Baltimore City, but median incomes are below the average for the City. The economic sectors employing the largest number of people in the census tracts near the proposed site are the wholesale and retail trade, the education, health and social services, and the manufacturing sectors.

In order to construct the facility where it is planned, several additional activities would need to occur prior to construction. A stormwater outfall needs to be relocated from the eastern part of the alignment to the western side in the southern part of Masonville Cove. The relocation of the stormwater outfall is not expected to have an impact on water quality in Masonville Cove. The only area where the outfall can reasonably be placed abuts a small wetland swale at the back of Masonville Cove (approximately 0.5 acre). A Baltimore City water line runs under the proposed alignment and the City has indicated that it must be moved so that it can be accessed for future maintenance. The most important pre-development task involves remediation of derelict vessels on the eastern side of the site near the former Kurt Iron and Metal (KIM) facility. Some of the derelict vessels are known to contain hazardous or other regulated wastes. A cleanup plan of these vessels has been negotiated with MDE. Removal of debris from both the aquatic and terrestrial areas of Masonville Cove prior to any habitat enhancement would also need to occur. A cleanup plan may also be required for that area.

Site construction of the proposed Masonville DMCF would include the use of a sand source below the site. In order to access the material, approximately 15 feet (ft) of silty overburden would need to be pre-dredged (stripped off), removed, and taken to a contained facility. The borrow area and sand source lie entirely within the proposed DMCF footprint. These sediments are expected to consist of fine sand with some silt and clay lenses. Testing of the surficial sediments indicated that considerable contamination exists in some areas of the site. These sediments are the silty overburden that would be stripped (pre-dredged) from the site and placed at the HMI DMCF. However, the material proposed for dike construction is relatively free of contaminants.

The potential impacts of pre-dredging, dike construction, and site operation were assessed relative to resources. The end use of the site (after it is filled with dredged material) is likely to be a marine terminal facility, which is a water-dependent use. The impacts are predicted to be as follows:

- Pre-dredging and mining of borrow materials would change the physiography of the site by deepening the water levels in the area in the short term. The site would be built to +36 feet mean lower low water (MLLW), which is similar in height to the adjacent Masonville Marine Terminal (MMT) Phase II.
- Site construction would convert tidal open water to fastland, which constitutes an irretrievable loss and requires mitigation. The project would fill 130 acres of Patapsco River bottom. Seven acres of this constitute the area where the dike cover river bottom or where the western barges would be moved and would remain open water [submerged at mean high water (MHW)].

- 184 • In addition, there are two small vegetated wetlands totaling 1 acre that would be filled as part
185 of the landside dike construction or stormdrain re-alignment. The landside dikes would also
186 impact 10 acres of upland habitat within the Chesapeake Bay Critical Area.
- 187 • Construction of a diked facility in this area is not predicted to impact tides or water surface
188 elevations, although some slight changes in currents are predicted. Increased flooding is not
189 anticipated as a result of the project. Flood modeling is ongoing.
- 190 • Following construction, water flow would be trained around the DMCF, with slight increases
191 to the north over the Ferry Bar channel. Slight increases in flow are likely to result in
192 downstream sections of Ferry Bar Channel with slight decreases in the upstream end and
193 Masonville Cove. Increases in flow would not impact navigation or safety in the Channel.
194 Marginally longer residence times are predicted in the areas of decreased currents resulting in
195 the potential for increased sedimentation rates in some parts of Ferry Bar Channel and
196 Masonville Cove.
- 197 • The proposed DMCF is not expected to have an adverse impact on groundwater. The site is
198 underlain with a clay confining layer (the Arundel Formation) that would prevent
199 contaminant migration below the site into the Patuxent Formation and the sides of the dikes
200 will be sealed using geomembranes. This will prevent contaminants from reaching the river,
201 or any aquifers.
- 202 • Temporary, localized changes are expected in clarity, color, and quality of surface waters in
203 the immediate vicinity during pre-dredging and perimeter dike construction. Modeling has
204 indicated that dike construction is the more significant source of turbidity and that the
205 dredging activities would not produce turbidity or contaminant releases that would exceed
206 surface water criteria. The toxicant release assertions were confirmed with standard elutriate
207 testing of the overburden materials.
- 208 • Dike building activities would generate a visible plume that, under certain tidal conditions,
209 could exceed the monthly average turbidity criteria over 21 percent of the cross-section of the
210 Patapsco River at this point. Turbidity minimization techniques (turbidity curtains) would be
211 employed to manage the plume and keep it in compliance with the 10 percent affected cross-
212 section State surface water standard. It is expected that construction monitoring would be
213 required.
- 214 • The potential for the release of nutrients and toxics from onsite sediments due to pre-
215 dredging and dike building activities was assessed. Elutriate testing of the surficial and
216 borrow materials was conducted to gauge the potential for nutrient and toxic releases. The
217 results of the elutriate analyses indicated that all of the parameters evaluated met U.S.
218 Environmental Protection Agency's (USEPA's) saltwater acute and chronic criteria and State
219 of Maryland saltwater and estuarine surface water criteria, where criteria exist.
- 220 • Both the modeling and elutriate testing predict the release of nutrients from the sediments
221 during dike building activities in an area that is already known to have elevated levels of
222 nutrients. Nutrient releases during dredging and dike construction are expected to be short-
223 term, temporary, and localized during the pre-dredging and construction of the DMCF.
224 However, elevated levels of nitrogen and phosphorous compounds can enrich the water and
225 stimulate algal growth. Some short-term stimulation of the phytoplankton communities may
226 occur as a result of dike building activities, particularly in summer.
- 227 • During placement of dredged material into the facility, dewatering, and materials
228 management within the facility, water would be discharged via spillways. These discharges
229 could contain elevated levels of nutrients and total suspended solids (TSS). Discharges from

facility operations at Masonville would be have a National Pollutant Discharge Elimination System (NPDES) Permit which would mandate the discharge water quality requirements for the project. It is anticipated that discharges at Masonville would be managed to meet an equivalent standard with respect to the current operations at the HMI DMCF, which has not had a measurable impact to the resources within the adjacent waters since it began operations over 20 years ago. These discharges would likely cause a localized increase in turbidity.

- The facility would constitute a new source of nutrients in this part of the estuary. Loadings estimates indicate that the overall discharges to the Patapsco River would be low relative to other major point sources and only have intermittent releases. However, the addition of nutrients into an area that already has elevated nutrient levels could stimulate phytoplankton growth.
- Pre-dredging and dike construction may release some toxics into the water column. Based upon modeling, metals and total PCBs would be well below the chronic water quality criteria within 20 meters of the dredging and construction points. These results were confirmed using standard bench (elutriate) tests of the on-site materials, which indicated that all of the parameters evaluated met USEPA's saltwater acute and chronic criteria and State of Maryland saltwater and estuarine surface water criteria, where criteria exist.
- Short-term increases in turbidity associated with perimeter dike construction, pre-dredging in the sand borrow areas, and discharges from the spillways could temporarily and locally depress phytoplankton communities. Localized and temporary increases in nutrient concentrations, however, could potentially stimulate phytoplankton growth. The combined effect is expected to be minor based upon observations made in the vicinity of the Poplar Island Environmental Restoration Project (PIERP) for nutrients, chlorophyll *a* and phaeophytin.
- Plankton studies in the area found zooplankton and fish species that are ubiquitous to the Bay. No early lifestages of sensitive anadromous or other commercially important species were found at the site, which is consistent with longer term plankton studies conducted in the area in the early 1990s. Therefore, any effects on plankton would be localized and negligible to the ecosystem.
- Non-mobile benthos within the site footprint would be lost as a result of pre-dredging and sand borrow activities. However, the benthic community in much of the proposed DMCF footprint is already stressed and degraded due to poor sediment and water quality. Benthic communities in Masonville Cove would not be disturbed by proposed DMCF construction activities.
- Hydrodynamic modeling indicated that construction of the proposed DMCF has the potential to increase fine-grained sediment deposition along the western side of the alignment and in parts of Masonville Cove. The current sedimentation rate is approximately 1 to 2 inches per year and would increase to by 0.4 to 0.8 inches per year. The benthic community is expected to be able to adapt to this change because deposition would be gradual.
- Masonville Cove improvements are expected to improve water quality in a localized area as well, which should have positive impacts on aquatic life and terrestrial forms that utilize the area.
- A small area of SAV (0.38 acres) occurs within the footprint of the proposed Masonville DMCF. In addition, approximately 10 acres of shallow water habitat (SWH) and Tier II/III SAV habitat are located within the proposed alignment. These areas would be impacted by site development and would be mitigated as part of the larger mitigation efforts for the tidal

open water habitat. Approximately 0.5 acres of SAV occur within Masonville Cove and should not be affected by pre-dredging, dike construction, or DMCF operations. The predicted increase in sedimentation to Masonville Cove is expected to occur on an annual basis and should not affect SAV in the Cove. Improvements to SAV habitat and SAV planting within Masonville Cove may increase the amount of SAV in the Cove.

- Finfish utilization within the footprint of the proposed DMCF is moderate relative to other areas within the Harbor, although the site does support substantial numbers of some species seasonally. The freshwater reaches of the Patapsco River are spawning areas for river herring and other anadromous species. Although spawning and early development do not occur at the Masonville site, both the proposed DMCF footprint and the Cove provide nursery habitat for out-migrating young of anadromous species. Fish utilization within the footprint of the DMCF would be displaced. However several of the Cove improvements are designed specifically to enhance fisheries habitat and utilization.
- The Patapsco River estuary lies within the general area that provides EFH for seven species managed under the Magnuson-Stevens Fishery Conservation and Management Act. Based on National Marine Fisheries Service (NMFS) coordination completed by MPA, it was determined that the project area lies within waters designated as EFH for juvenile and adult summer flounder, adult and juvenile bluefish. Low numbers of both species were collected in site-specific studies, so an EFH assessment was completed. The assessment concluded that because both species were uncommon to the area, the in-stream habitat and forage impacts would not impact bluefish or summer flounder populations within the Chesapeake Bay.
- The proposed DMCF does not lie within a part of the Harbor that is commonly commercially harvested (due to gear restriction, fish tissue contaminants, and low abundances of many target species). Therefore no effect on commercial fisheries is expected. The Masonville area is not an important recreational fishing area at present, so no negative impacts are expected.
- Pre-dredging and dike construction activities would require time of year (TOY) restrictions for the protection of sensitive lifestages of aquatic species, particularly anadromous fish, from February 15 to June 1.
- Ten acres of existing upland habitat would be lost along the existing Masonville Marine Terminal. No other adverse impacts to terrestrial resources or bird species were identified. Masonville Cove improvements are expected to benefit these resources.
- Endangered Species Act (ESA) Section 7 consultation and assessment has been conducted for sea turtles, listed whale species, and shortnose sturgeon at the request of the National Marine Fisheries Service (NMFS). The ESA assessment indicates that the project poses no threat to aquatic RTE species. The closest shortnose sturgeon collection is 8.5 miles away near the mouth of the Patapsco River. The species is only transient to the project area, if present at all. Thus, no impacts to shortnose sturgeon are expected. Sea turtles occur within the Chesapeake Bay, but are exceedingly rare in the northern Chesapeake Bay and no strandings or sightings have been reported within Baltimore Harbor, indicating that sea turtles are not likely utilizing the project area. Listed whales generally do not utilize the Patapsco River. The closest live whale observations on record were near the Bay Bridge in 1996. The potential for increased ship strikes of listed whales as shipping traffic increases over the next 20 years is expected to be minimal due to the low numbers of ship strikes currently occurring near the main entrances to the Port.

- An active bald eagle nest was located on the northwestern tip of the Cove, but the tree has been blown down and the eagles' ability to use the remaining trees to construct a new nest is unlikely (based on Spring 2006 Maryland DNR surveys). No other RTE species or natural heritage species of concern are known to utilize the site.
- Air emissions were estimated based on engine sizes and estimated hours of operation for both construction and site operations. Site operation emissions were not estimated to be significant. However, construction activities, because they would be completed on a compressed time schedule, could include significant releases of nitrogen oxides (NO_x). It appears that from an initial analysis of emissions that the project would be regulated under the Clean Air Act and would require a Federal Conformity decision since emissions would be over the 100 tons per year (tpy) NO_x threshold. A Conformity study and a Conformity Plan are ongoing.
- The proposed DMCF has the potential to be a major element in the landscape from some vantages. However, it would be consistent with the current urban Baltimore Harbor landscape. Masonville Cove improvements are expected to diversify the plants (in the critical area buffer), which should help improve aesthetics.
- Fort McHenry lies within 1 mile of the proposed DMCF along the north side of the Patapsco River and is within the viewshed of the proposed project. A viewshed analysis has indicated that the proposed DMCF would constitute a significant feature within the viewshed. From most viewpoints, the proposed project is not anticipated to adversely affect views because it would blend into the surrounding area.
- Project would increase jobs and revenues at both the State and local levels.
- Unused industrial land would be converted to a public use park.
- No adverse impacts to minority or low-income populations are anticipated.

10.2 NO ACTION ALTERNATIVE

Under the no action alternative, the Masonville DMCF would not be developed. Because the MPA has determined that the currently scheduled dredging activities should not be deferred, the no action alternative would likely result in the need to place the materials scheduled to go to Masonville at the HMI DMCF and the Cox Creek DMCF through 2009. It should be noted that under the no action alternative some or all dredging may be deferred, though the MPA would prefer to continue dredging placement projects (Sections 1.4.2 and 5.1). Beginning in 2010, the HMI DMCF will be unavailable for placement of dredged material (Maryland Code Section 5-1103) and all dredged material would be placed at the Cox Creek DMCF. The next proposed placement facility is not likely to be constructed until approximately 2014. From 2009 to 2014 there are 4.6 mcy of dredged material that would have been placed at the Masonville DMCF that would need to be placed in an existing containment facility.

The no action alternative involves annual overloading at both the HMI DMCF and the Cox Creek DMCF. Overloading at the Cox Creek DMCF would decrease the overall site life of Cox Creek by approximately 4 years, assuming that the material scheduled for placement at Masonville for 2010 through 2012 were to be placed at Cox Creek and the material to be placed at Masonville in 2009 was placed at the HMI DMCF. If the overall capacity of Cox Creek is decreased by the significant overloading (two to three times its efficient placement rate after 2010), the site may be filled to capacity prior to 2012. If the Cox Creek DMCF is filled to

capacity prior to 2014, there would be no DMCFs in the area to receive Baltimore Harbor sediments.

Overloading at the HMI DMCF and the Cox Creek DMCF would very likely result in the need to hold water at the facilities for longer periods and may result in increased discharges of nutrients into the Chesapeake Bay and Patapsco River, respectively. These increased discharges may require modifications to the existing discharge permits. Additional nutrient offsets, such as DMCF spillway treatment or retrofits to existing wastewater treatment plants may also be required.

The 130 acres of open water, 10 acres of adjacent uplands at Masonville, and 1 acre of vegetated wetland would not be affected if the Masonville DMCF is not developed. The existing conditions at the Masonville site would remain. The air emissions associated with the construction of the Masonville DMCF would not be released. Many of the emissions that would be associated with the management of the dredged material at Masonville would be associated with the HMI DMCF and the Cox Creek DMCF since this material would still be managed at a facility. The full-time equivalent (FTE) jobs that would be associated with the construction and monitoring of proposed Masonville DMCF would not be created.

If the proposed Masonville DMCF is not constructed, there would be no regulatory reason to remediate the derelict vessels on the western side of the proposed DMCF site. The funding currently allocated for site development would be released to other Maryland Department of Transportation (MDOT) efforts and the remediation of the 25 derelict vessels would be deferred. Thus, removal of this source of contamination from the Patapsco River would not occur. Also, the other ecological benefits and community enhancements associated with the Masonville DMCF and the proposed mitigation package would not be realized.

10.3 CUMULATIVE IMPACTS

In addition to an assessment of the individual project on area resources, NEPA requires that the cumulative effects of the project in combination with similar projects be assessed. Activities warranting the greatest attention from the cumulative impacts perspectives are those activities that, in combination with development of the proposed DMCF, would potentially magnify what are perceived by resource agency personnel and the public as the most significant impacts of the proposed work in Baltimore Harbor and adjacent areas of the Chesapeake Bay. These activities meriting particular scrutiny include: 1) conversion of substantial areas of tidal open water and Patapsco River bottom habitat, including SWH, to upland habitat, 2) major nutrient or turbidity inputs, 3) major in-water construction projects or dredging operations, and 4) other significant air emissions or surface water loadings.

Recent and reasonably foreseeable human actions that have converted or would convert tidal open water habitat to uplands include the HMI DMCF, the Seagirt Marine Terminal facility, the Cox Creek DMCF, the Masonville DMCF, and the proposed second and third harbor placement options described in Chapter 1. Currently, these future second and third potential Harbor placement options include placement facilities at Sparrows Point and BP-Fairfield. The Cox Creek DMCF was built in the 1960s but was rehabilitated in 2002 to accept Harbor materials; the

new work included impact to 5 acres of tidal open water. Some additional in-water impacts would occur in order to build a relieving platform and widen the access channel in order to support a terminal facility as the final end use of the Masonville project. In addition, other non-Federal projects may be implemented in the Middle Branch of the Patapsco River. The total acreage of river/bay bottom in the Patapsco River from the currently operating and proposed facilities is approximately 2,085 acres.

The proposed Masonville DMCF and the other proposed facilities will add to the nutrient load in and around Baltimore Harbor. The BP-Fairfield and Sparrows Point sites, if implemented, would constitute additional point sources and loadings to the Patapsco-Back River complex. Based upon the proposed sizes of the BP-Fairfield and Sparrows Point sites, the loadings are expected to be between one to two times those at Masonville.

The projected daily loadings from Masonville or any of these DMCFs are substantially lower than those of most of the major point source contributors in the Patapsco River, but would add to the overall loadings within the lower Patapsco River, which is already designated as impaired for nutrients. Excessive nutrients can stimulate phytoplankton growth and contribute to anoxic conditions. Because the discharges are intermittent, these would be short-term effects. It is anticipated that Masonville and any or all future DMCF loadings would need to be offset or mitigated in order for the Patapsco-Back River tributary complex to meet future total maximum daily load (TMDL) requirements for the tributary. Therefore, the cumulative water quality impacts to the Patapsco estuary should be minimal because they will be ameliorated by offsets and mitigation.

It is expected that all future air emissions from the proposed DMCFs would be regulated under the provisions of the Clean Air Act, as necessary. Therefore emissions would be controlled by offsets, and cumulative impacts are not expected.

The loss of approximately 2,085 total acres of tidal open water habitat within the Patapsco River and adjacent areas of the Chesapeake Bay would be a result of past and proposed projects as described in Table 10-1. This also constitutes a permanent loss of Patapsco River and Chesapeake Bay bottom and benthic and aquatic habitat (Table 5-19). This is a significant loss of habitat within the watershed. The conversion would also displace fisheries resources from these areas. Because the lower Patapsco River supports both anadromous and marine species, both migratory and resident fish are likely to be displaced. Baltimore Harbor is considered EFH for several MSCFMA regulated species but utilization is relatively low compared to other areas of the Chesapeake Bay. No cumulative adverse impacts to EFH species are anticipated. Commercial fisheries harvesting is minimal near the Masonville and BP-Fairfield sites, but does occur in the outer Harbor near Sparrows Point. Sparrows Point is the only future site that is in an area that is commonly commercially harvested. No significant, adverse impacts to commercial harvesting from the proposed Masonville DMCF are expected. The HMI DMCF has had no significant long-term effects on commercial harvesting. Although losses of tidal open water habitat are anticipated, the associated mitigations and enhancements to aquatic habitat within the lower Patapsco River (e.g., additional wetlands and softened shorelines, in-stream habitat features, improved substrates) are expected to ameliorate the cumulative effects on aquatic habitat and harvestable resources. The cumulative effect of capping or remediation of sediment

contaminants as a result of the proposed DMCFs or associated mitigation projects could have a cumulative positive impact on fish tissue contamination within the lower watershed.

Table 10-1. Acreages of Current and Proposed In-Water Projects

Facility	Status	Acres
Hart-Miller Island	Existing	1,140
Seagirt Marine Terminal	Existing	149
Cox Creek DMCF	Existing	5*
Masonville DMCF	Proposed	130
Sparrows Point DMCF	Proposed	Up to 460
BP-Fairfield DMCF	Proposed	146-199
Other Pending Projects in the Middle Branch of the Patapsco River	Proposed	2

*acres added as part of site rehabilitation

No other potential negative cumulative impacts are expected.

10.4 MITIGATION AND ENVIRONMENTAL BENEFITS

The proposed project with the integration of improvements to Masonville Cove as compensatory mitigation has the potential to improve some aspects of the Patapsco River. Potential improvements resulting directly or secondarily from of site development include:

- The remediation of 25 derelict vessels and capping of contaminated sediments has the potential to improve (decrease) the toxics burden in this part of the Patapsco River, making contaminants such as metals, including mercury and PCBs less available to the aquatic environment. This remediation has the potential to improve the benthic community adjacent to the site due to the reduction of toxics. Indirectly, remediation and cleanup within the water also makes the contaminants less bioavailable for accumulation in fish tissue, which could lower the potential human health and ecological risks associated with consumption of contaminated fish.
- The proposed Masonville Cove cleanup and improvements are expected to benefit both the ecological system as well as the adjacent community. Cleanup of the terrestrial areas around the Cove would remove a substantial amount of debris and trash that would improve both the aesthetics and health and safety of the area. Because the Cove improvements include an environmental education center and trails system, the soils would require cleanup up to residential soil standards, which would be funded by the MPA. This may result in a net improvement in soil quality in some areas. The current vegetated buffer consists of opportunistic plants of marginal ecological value. Mitigation and improvement plans include planting of native species to improve habitat quality. Indirectly, this would provide better habitat for terrestrial resources.
- The education and trails system was conceived with community input and is being designed specifically to improve community access to Masonville Cove and to improve ecological recreation and educational opportunities in the Brooklyn-Curtis Bay area. These are expected to provide direct benefits from the project. Indirectly, the project would stimulate community involvement and environmental stewardship.

- Aquatic improvements to Masonville Cove that are part of the compensatory mitigation include the cleanup of large in-water debris, tidal wetlands creation and enhancements, substrate improvements to protect and enhance SAV and benthic conditions, softening of shorelines and creation of beach habitat, and fish reef installation (reef balls, rock and sand mounds). Directly, this would improve the benthic condition and fish habitat in the immediate area. The south shore of the Patapsco River is known to be an important nursery area for anadromous fish. The proposed reefs are being designed to improve in-stream refugia for the species known to utilize the area. Indirectly, this may stimulate fish stocks within the Patapsco estuary as well as improve recreational fishing opportunities in this part of the Harbor. Any improvement in fish abundance would have secondary benefits to avian fish predators such as raptors, herons and egrets, and some diving ducks. The beach areas and adjacent tidal flats would provide forage areas for wading and shorebirds as well as shallow refugia for smaller fish species. Cove improvements are also expected to enhance the shallows to allow for possible expansion of existing SAV beds, which should provide secondary improvements to water quality and aquatic habitat.
- The hard substrates that would be installed in Masonville Cove and the rock of the dike armor would provide attachment areas for encrusting fauna such as platform mussel, barnacles, and perhaps even oysters. Bivalves (mussels and oysters) are filter feeders and would help to improve water clarity within the Cove. Water clarity improvements would have a secondary benefit to SAV in the immediate area.
- Short-term and long-term beneficial impacts associated with the construction and operation of the proposed DMCF include the increased spending that would create jobs both locally and at the State level. The jobs created would benefit employment rates, income, and revenues. The additional beneficial impact of the project would be increased placement capacity to meet Baltimore Harbor dredged material placement needs. The direct benefits are to navigation safety and direct Port of Baltimore employment. Secondary benefits are realized in induced jobs and continued Port of Baltimore expansion and cargo market share.